Wireless Wizards in the Classroom

1. **Describe the practice proposed for recognition, and list its objectives. Detail how the practice is innovative and how it promotes high student achievement.**

Technology must be an essential component of educational practices in the 21st century. Our school has embarked on a journey into the future by piloting an innovative instructional strategy utilizing technology as a tool in the classroom. The program is being implemented in grade 7 with the teachers and students equipped with handheld computers, keyboards and wireless Internet access.

The project is entitled " **Wireless Wizards in the Classroom".** Cutting edge technology is being used to incorporate several interdisciplinary projects into the 7th grade curriculum using technology-based resources. In each project the students use the handheld computers for Internet research, keyboarding, storing data and preparing word documents. Classroom and time management techniques are enhanced as students keep track of project due dates using the calendar and task features. Students share information with collaborative group partners using the infrared beaming feature. The teacher also uses this feature to beam lesson plans or web sites for students to access.

Among the many objectives of this innovative project are:

- To improve student achievement in conjunction with state standards
- To enhance communication among parents, teachers and students
- To increase classroom productivity
- To improve students' time-management skills
- To foster greater collaboration among students
- To enhance students' presentation skills
- To infuse project-oriented learning, Internet research, and word processing into the daily infrastructure of the class
- To blend multicultural, interdisciplinary investigations with technology
- To foster collaboration among teachers within schools and districts, and to provide a forum for sharing with peers

Each **"Wireless Wizard in the Classroom"** project has a teacher-made website which the students can access from their handheld computer. Each website has been designed to include hotlinks to acceptable Internet resources. Pages previously visited on the Internet are stored in the handheld computer cache and can be retrieved when out of the wireless environment. A Teacher Web homework site is updated daily to allow students to access assignments, due dates and additional web links to assist in the project research.

A few of the projects being implemented are described below:

Sunergy for the New Millennium- Physical Science and Math are used as students participate in a collaborative Internet project written and managed by their teachers. Students from all around the globe are invited to complete a simple science experiment and then post their data on the Sunergy website. Students use their handheld computer to locate and correspond with participants, identify latitude/longitude/elevation, post and compare data. The handheld computer is used to aid in the conversions necessary to calculate calories produced. Students then complete a final report prepared after the data is analyzed and post their report for all schools to share. **http://www.angelfire.com/on2/sunergy/**

Starry Starry Night - Science, Social Studies, Language Arts and Art are integrated as students complete a constellation research project. During the study of ancient Greece, students choose a constellation, research the Greek myth associated with it using their handheld computer. After reading several versions of the myth posted on various Internet websites, students must write the myth in their own words and style on pocket word. A pictorial version of where the stars are located within the mythological picture is created in art class. The culmination of this project is for students to see the constellations projected in the night sky in a portable planetarium. Written

myths are turned in and displayed along with the art project. Students share their work by giving oral presentations to the class. **http://www.angelfire.com/stars2/myths/index.html**

Say No To Drug Project - Decision-making skills are an integral part of the project that has student pairs researching health-related issues pertaining to substance abuse. All information gathered is presented in a student-created Power Point Presentation, which discusses the facts and consequences related to using various dangerous drugs. Students access the project website for links to reputable information on their assigned drug using their handheld computer. Project guidelines and a rubric are provided for students to meet necessary criteria. The library is also used for traditional research. Students create the power point presentations in the computer lab after initial instruction by the computer teacher. Student pairs will make their presentation orally to classmates using the teacher laptop and projection system. The school SAC (Student Assistance Counselor) and parents are invited.

http://www.angelfire.com/journal2/sayno/index.htm

Study of NJ Habitats - The human impact on our environment and watershed is studied as students participate in a yearlong Ecosystem Survey in science class. At the onset of the school year students use the handheld computer to access the project website where they become familiar with each aspect of the aquatic and terrestrial components of the project. During the school year, students will visit a deciduous forest (spring and fall), a saltwater marsh and the beach to study and compare the different ecosystems and to determine the health of the watershed. Digital pictures are taken at each location. Students have access to these pictures to create a power point journey of each location visited over the course of the year.

http://192.107.108.56/portfolios/t/tarant_l

2. List the specific Core Curriculum Content Standards, including the Cross-Content Workplace Readiness Standards, addressed by the practice and describe how the practice addresses those standard(s). Provide an example to substantiate your response.

Cross-content workplace readiness standards apply to all areas of instruction.

1. **All students will develop career planning and workplace readiness skills.**
   Each project requires students to work cooperatively and collaboratively. Students will prepare oral and power point presentations, which will enhance their opportunities to be successful in the workplace.
2. **All students will use technology, information, and other tools.**
   Each of the projects addressed utilize the handheld wireless computer as well as conventional desktop computers. Science laboratory tools are used to conduct water tests, calculate calories and measure tree height.
3. **All students will use critical thinking, decision-making, and problem-solving skills.**
   Students apply Blooms Taxonomy of higher order thinking skills to complete each of the projects. Decisions are made regarding personal choice to avoid drugs. Problem solving is applied to determine why calories produced in the Sunergy project differed at each location and what course of action should take place as a result of human impact on ecosystems.
4. **All students will demonstrate self-management skills.**
   Students utilize the task and calendar features of the handheld computer to manage each assignment and meet the required due dates.
5. **All students will apply safety principles.** Students will follow laboratory safety procedures when performing experiments in school and during fieldwork.

Science Standard 5.2 All students will develop problem solving, decision making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results.

Each of the projects addressed requires students to apply the 5.2 science standards skills:

Sunergy for the New Millennium: Students must develop hypothesis as to why calories produced differ at each participating location. They will conduct the experiment and then analyze the data collected to draw a conclusion and communicate a final report.
Starry Starry Night: Students gather astronomical data related to their constellation, prepare a written report and communicate the results to their classmates in various forms.
Say No to Drug Project – Students will research required data, present information to class and demonstrate decision-making skills regarding the use of illegal substances.
Study of NJ Habitats – To complete experiments students collect data and systematically observe each ecosystem to determine human impact and draw conclusions about the health of the watershed.
The following additional Core Content Curriculum Standards in Science, Language Arts, Social Studies and Health are highlighted in these projects:
Sunergy –Standard 5.9 Physical Science – Students must apply knowledge of the modes of heat transfer (conduction, convection and radiation) to determine how latitude affects calories produced when heating water. **Standard 5.5 Mathematics in science** skills are applied when collecting and analyzing data and in the necessary calculations of calories produced during the project experiment.
Starry Night - Standard 5.11 Astronomy- Data is collected pertaining to constellations **Standard 3.1 Speaking** – Oral presentation of constellation myth; **Standard 3.2 Listening** – Students will be the audience as their peers present their myths; **Standard 3.3 Writing** - Each student must write the myth they researched according to the friendly rubric guidelines used in GEPA preparation. Social Studies Standards **Standard 6.3 Human History** – Students study the ancient Greek civilization **Standard 6.5 Multiculturalism** – Students uncover various cultural differences in myths told about same constellations.
Say No to Drug Project - Standard 2.1 Health Awareness and Disease Prevention – Students research illegal drugs to become aware of correct facts and consequences in hopes of preventing future drug use; **Standard 2.2 Health Enhancing Life Skills** – Students become aware of behaviors necessary to maintain a healthy life style; **Standard 2.3 Alcohol, Tobacco, Drugs,** - Research topics include illegal drugs, alcohol and consequences of use. **Standard 3.1 Speaking** – Students will present their power point project to class; **Standard 3.2 Listening**- Students will be the audience for their peers, **Standard 3.3 Writing** – Students will prepare written note cards to accompany their power point projects.
Study of NJ Habitats– Standard 5.1 Systems – Students will identify the interactions between biotic (living) and abiotic (nonliving) factors that must exist in a healthy ecosystem and the role of the water cycle; **Standard 5.5 Mathematics in Science**- Students will use a clinometers and mathematical calculations to measure and determine tree height; **Standard 5.6 Organisms** – Living species will be identified; **Standard 5.7 Diversity of Life**- Students will categorize the different life forms at each ecosystem visited; **Standard 5.12 Environmental Science** – The overlying theme of this project is to determine the human impact on the environment and to develop an appreciation for different habitats.

3. Describe the educational needs of students that the practice addresses. Document the assessment measures used to determine the extent to which the objectives of the practice have been met. Provide assessments and data to show how the practice met these needs.

Success in the 21st century is dependent upon the effective use of technology. Using handheld computers will be a key factor in meeting educational needs. This practice will allow our students to think critically, work cooperatively and communicate ideas effectively using current technology. **"Wireless Wizards in the Classroom"** not only meets the educational needs of our students but also prepares them for success in the future.

This practice impacts approximately one hundred twenty-five culturally diverse students including our special needs and bilingual population. All students are able to participate successfully in each of these projects. Use of handheld computers has fostered student interest and motivation and increased participation. Collaborative grouping allows peer mentoring to occur where necessary. Effective use of the Internet is being addressed as students use their handheld computer for research as well as improving keyboarding skills. There has been an increase in pride in the finished product as students are required to share their work with their peers and others. In order to achieve success in the future workplace, our students are gaining confidence in their speaking, writing and listening skills while perfecting the ability to think critically and make decisions. The organizational features of the handheld computer are allowing students to manage their time and assignments more efficiently.

Assessment measures being utilized combine authentic assessment practices with traditional scoring criteria. Informal assessments will be ongoing during projects. Individual conferences to assess progress will occur bi-weekly. Teacher will conduct informal observations to evaluate group participation and time on task. Project rubrics will be reviewed on a weekly basis to keep students directed. Students will complete self -assessment and cooperative group assessment inventories.

Formal assessments will be conducted at the culmination of each project. These will be graded with traditional scoring methods used by the district. Teacher-made exams will check student mastery of curriculum. Collaborative Internet projects require a final report to be submitted to the website for consideration by the project manager. Internet Web quests using the handheld computer will be assigned based on related areas of study. Web quests require students to complete a prescribed task and submit a written solution for grading. Oral and power point presentations will be scored using a combination of teacher and student created rubrics. Presentations will be video taped and reviewed by teacher and students not only for grading purposes, but also for future improvement of presentation skills. Handheld computers are also used in the assessment process in conjunction with the teacher laptop station. A question is posed to students who then individually answer the question on their handheld computer. The teacher receives all student responses as answers are formulated in a spreadsheet format on laptop. Student handheld computer flashes if answer is correct providing instant feedback.

4. Describe how you would replicate the practice in another school and/or district.

To replicate this practice the participant would need to:

- Explore and purchase the components of a wireless network.
- Identify and assemble the hardware components
- Teachers would need to engage in professional development and Internet training to understand the components of the hardware and software used.
- Investigate these and other Internet projects available that would meet individual school curriculum.
- Incorporate student Internet research in student projects.
- Instruct students in techniques to create and present power point projects.
- Commit to using handheld computers on a daily basis in at least one organized classroom activity.
- Share student experiences using handheld computers

By participating in projects that engage the students to think critically and interact with other students around the globe a sense of meaning and connectedness with all subject areas can be achieved.